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ABSTRACT

The objective of this study was to evaluate the impact of the CO-Plus project by organizing data to utilize the classroom as the basic unit of analysis. The study employed classroom observations, a variety of questionnaire responses from staff and pupils, achievement test scores, and related data. Questionnaire data were summarized using factor analysis and relationships between observations. Questionnaire responses were identified using multiple regression and canonical correlation. The analysis indicated that significant relationships exist between classroom behavior, staff and pupil attitudes, and achievement test gains and that the utilization of the classroom as the basic unit strengthens the analysis. (Author)

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CLASSROOM BY CLASSROOM ANALYSIS OF THE IMPACT OF A COMPENSATORY EDUCATION PROGRAM

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The Chicago Board of Education

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Classroom by Classroom Analysis of the
Impact of a Compensatory Education Program

Introduction

The Cooperatively Planned Urban School Program (CO-PLUS Program) is an experimental project funded through Model Cities, administered by the Chicago Board of Education and intended to offer a saturation of services to each of seven inner city schools. As originally conceived the program included nine separate projects:

- the New Careers Project designed to provide paraprofessional support in the classroom through the employment of residents of local Model Cities Target Area, and to provide career counseling and an academic program at both the high school and college level for these paraprofessionals,

- the Instructional Team Leaders Project which provided approximately ten team leaders for each school to support the school instructional program, work with the school inservice program and coordinate the activities of the parent-team grade level planning groups (see below),

- The Audio-visual Equipment and Instructional Materials Project, which provided special instructional equipment and materials to the schools in addition to those regularly provided by the Board of Education,

- the Inservice Training Project which provided paid inservice for teachers in the seven CO-PLUS schools,

- the Parent-Team Grade Level Planning Project intended to establish a functioning advisory team, including parents, teachers, team leaders and classroom aides, for each grade level in each CO-PLUS school,

- the Preschool Project which provided a preschool instructional program for approximately 800 three and four year olds in seven specially constructed schome (school-home) buildings, and which provided a homemaking program for parents of children attending the schome ,

- the Community Schools Project which provided an evening program for parents and other Target Area residents, and tutorial and recreational programs for the students of the CO-PLUS school,

- the Nutritional and Health Project intended to provide medical and dental examinations for every student and to provide the opportunity for free breakfast and lunch at school, and

- the Administration Project intended to provide planning, evaluation, and coordination support for the total CO-PLUS Program.

Almost from its inception the CO-PLUS Program was beset with financial difficulties and uncertainties which significantly limited the implementation of the projects. For example, when the austerity programs were in effect, it was impossible to hire new personnel, replace existing personnel who resigned, or expend many allocated funds

without explicit approval on a case by case basis. This is mentioned because it had a definite psychological impact on the project personnel and may have influenced the data gathered by the research team.

In the second action year the projects were reorganized so that each school had its separate instructional project which included elements of the Instructional Team Leader, Parent-Team Grade Level Planning, and the Inservice Projects. Throughout the three years of operation of the CO-PLUS Program the schools were encouraged to develop their school instructional program and other school services in the way which uniquely benefited their students, parents and community.

The data presented in this report were gathered during the 1971-72 school year, and were intended to reflect on the component projects of this program.

Instruments

It was the responsibility of the research and evaluation team to identify, collect, analyze and report data which accurately reflected the effectiveness of these projects in meeting their stated objectives.

To fulfill this responsibility, the research team developed and utilized a variety of data collection instruments:

- questionnaires were developed for teachers, team leaders, classroom aides, principals and administrative staff, and pupils to determine their response to specific elements in each of the projects,
- two observation instruments were developed, to analyze the activities of students and teachers and aides in the classroom and to determine, if possible, the impact of these projects on classroom instruction, and
- the Metropolitan Achievement Tests were administered to the CO-PLUS students on a pre-posttest basis the Fall of 1971 and Spring of 1972.

The analysis of these data was reported in a summary evaluation report to the Chicago Board of Education. This report represents a supplimentary analysis of some of the same data included in the summary report using the classroom as the basic unit of analysis.

Procedures

During the 1971-72 school year the research staff visited each of the CO-PLUS classrooms and recorded their observations using the CO-PLUS Classroom Observational Record, a specially designed instru-

ment which documents a variety of information separately for each of the instructional groups in the classroom including the group size, the group leader, the subject covered, the instructional materials utilized, the activity of the leader, and the apparent degree of attention of the students. In addition, a second observational instrument was used to focus on the behavior of students in the classroom. The CO-PLUS Student Observational Record documents the degree to which the students were involved in the following activities:

- independent involment with instructional materials,
- preparation for a new activity or changing from one activity to another,
- interaction with peers,
- interaction with the teacher,
- interaction with the classroom aide, and
- teacher-directed group instruction.

Each of these categories is subdivided into specific student activities to assist the rater in accurately classifying student behaviors. Each cycle on this instrument describes the number of students at that moment engaged in each of the various behavioral categories.

The teacher, team leader classroom aide and administration questionnaires were administrated during a special inservice session at each school during the last two weeks of the school year. The student questionnaire was administered by teacher to students in the third through eight grades, during this same time period.

The Metropolitan Achievement Tests were given to the students by their teachers in September, 1971 and again in June, 1972.

The data were organized by classroom for this analysis. Since a direct link had to be established between the data source and the classroom, the scope of the study was limited to the following:

- the CO-PLUS Student Observational Record,
- the CO-PLUS Class Observational Record,
- the CO-PLUS Student Questionnaire,
- the CO-PLUS Teacher questionnaire, and
- the Metropolitan Achievement Tests.

To maintain parsimony, both the teacher and student questionnaires were factor analyzed. As shown in Figures 1 and 2, seven factors were identified for the student questionnaire while 15 factors were identified for the teachers. For the analysis, the weights determined in the initial factor analysis were used to calculate factor scores for each classroom.

Similarly, the CO-PLUS Student and Class Observational Records were summarized in terms of the percent of pupils and/or teachers engaged in each activity. Figures 3 and 4 contain a description of the ways in which the Observational Records were summarized.

The test scores for the pupils were summarized as shown in Figure 5 to reflect the pre-posttest gains on each subtest and the percent gain in the ratio of rights to items attempted between the pre and posttest.

FIGURE 1

FACTORS INDENTIFIED FOR THE
CO-PLUS STUDENT QUESTIONNAIRE

Label	Directionality	Description
CSQ1	+	Positive attitude toward the provisions of the CO-PLUS Program
CSQ2	+	Negative attitude toward specific elements of the CO-PLUS Program
CSQ3	+	General verbal factor concerning feelings about achool
CSQ4	Reversed	Perceived parental support for the teacher and school
CSQ5	Reversed	Dislike for school
CSQ6	Reversed	Dislike for nutritional program
CSQ7	Reversed	Perceived support for home work from parents and classroom aide

FIGURE 2

FACTORS INDENTIFIED FOR THE
CO-PLUS TEACHER QUESTIONNAIRE

Label	Directionality	Description
CTQ1	+	Attitude toward the Parent-Team Project
CTQ2	+	Attitude toward the Inservice Project
CTQ3	+	Attitude toward the Classroom aide
CTQ4	+	Reported utilization of inservice information in the classroom
CTQ5	+	Attitude toward the use of visual equipment in the classroom
CTQ6	Reversed	Attitude toward the use of audio equipment in the classroom
CTQ7	+	Male-Female orientation
CTQ8	+	Attitude toward the value of teaching machines
CTQ9	Reversed	Experience
CTQ10	+	Reported support and guidance for classroom aide
CTQ11	+	Negative attitude toward the role of the Instructional Team Leader
CTQ12	+	Attitude toward the Audio-visual and Instructional Materials Projec
CTQ13	+	Negative attitude toward the Instructional Team Leader and Community School Projects
CTQ14	+	Negative attitude toward the role of parents and Instructional Team Leaders in the school authority structure
CTQ15	+	Attitude toward the use of films and TV in the classroom

FIGURE 3

DESCRIPTIVE DATA
CO-PLUS STUDENT OBSERVATIONAL RECORD

Code	Description
CSOR1	Preparing for a new activity or changing from one activity to another
CSOR2	Interaction with peers
CSOR3	Interaction with the teacher
CSOR4	Interaction with the classroom aide
CSOR5	Teacher-directed group instruction

FIGURE 4

DESCRIPTIVE DATA
CO PLUS CLASSROOM OBSERVATIONAL RECORD

Code	Description
CCOR1	Average instructional group size
CCOR2	Percent of student directed instruction
CCOR3	Percent of instruction in reading and language arts
CCOR4	Percent of instruction involving the use of textbooks
CCOR5	Percent of instruction involving the use of instructional materials other than textbook
	Percent of Teacher Activities directed towards:
CCOR6	- Clerical tasks
CCOR7	- individually prescribed activities for students
CCOR8	- group activities
CCOR9	- activities involving the entire class
CCOR10	- conference activities
	Percent of Students involved in:
CCOR11	- individually prescribed activities
CCOR12	- group activities
CCOR13	- activities involving the entire class
CCOR14	- conference activities
CCOR15	Percent of students attending to instruction

FIGURE 5

TEST SCORES INCLUDED IN THE ANALYSIS

Code	Description
	Gain in the percent right of attempts on:
PCTR	- the three heading subtests
PCTM	- the three mathematics subtests
	Gain in the publisher's standard score units on:
TEST1	- the Word Knowledge subtest (Vocabulary)
TEST2	- the Word Analysis subtest (Word Attach Skills)
TEST3	- the Reading subtest (Comprehension)
TEST4	- the Language Arts subtest
TEST5	- the Spelling subtest
TEST6	- the Mathematics Computation subtest
TEST7	- the Mathematics Concepts subtest
TEST8	- the Mathematics Problem Solving subtest
TEST9	- the Total Reading Score

Finally, three additional covariables were used in the analysis:

- grade level (grade),
- the ratio of students with pre and posttests, to all students who took a pretest and/or posttest (PCT STB), and
- the percent of students whose native language is not English (PCT TESL).

Results

As indicated in Figure 6, there was a significant gain on all the subtests, and in the percent of items students answered of those attempted, i.e. guessing probably decreased on the posttest. As shown by the means for the observational scales (all means are inflated by a factor of 10), over 50% of all instruction received by pupils involved the class as a whole, while approximately 18% of the instruction observed was classified as individual involvement with materials. These figures agree with past analyses of the instruction provided in this program. Finally, it is worth noting that approximately 30% of the students were lost over the period between the pretest and posttest, indicating the generally high level of transiency characteristic of these schools.

Figure 7 indicates the factor analysis between the Student Observation Record and the test score gains.

As these data indicate, although there were six significant factors, there was little interplay between the test scores and observations. Factor 1 appeared to be related to reading achievement, Factor 2 to mathematics achievement, Factor 3 to individualized instruction, Factor 4 to the gain in percent right of those attempted. A significant ancillary finding was the moderate correlation (r.=21) between the percent stability and the achievement gain of pupils on the mathematics concepts subtest.

Figure 8 indicates the factor analysis between the factors of the Student Questionnaire and the test scores. As in

FIGURE 6

MEANS AND STANDARD DEVIATIONS FOR THE
CO-PLUS STUDENT OBSERVATIONAL RECORD AND TEST SCORE GAINS

MEANS AND STANDARD DEVIATIONS

VARIABLE	MEAN	STD DEV
PCTR	21.3086	24.9629
PCTM	18.3519	27.4931
TEST1	6.4406	4.5643
TEST2	6.3969	4.3806
TEST3	8.3572	4.4090
TEST4	2.5706	4.9891
TEST5	5.2311	5.2894
TEST6	10.5488	5.8955
TEST7	4.7214	5.0012
TEST8	4.1072	6.0942
TEST9	6.8164	4.5304
GRADE	4.0988	2.3278
PCT STB[1]	69.8889	15.2788
PCT TESL[2]	2.4012	6.6524
CSOR1	183.5617	250.9760
CSOR2	112.0988	112.4680
CSOR3	87.8827	113.7296
CSOR4	54.0926	118.5731
CSOR5	38.9012	79.7280
CSOR6	520.5247	340.1893

FIGURE 7

FACTOR ANALYSIS FOR THE STUDENT OBSERVATIONS AND TEST SCORES

VARIMAX ROTATION

	1	2	3	4	5	6
	PERCENT OF VARIANCE					
	18.862	13.495	10.208	9.430	7.485	6.476
	ROTATED FACTOR LOADINGS					
PCTR	.380	.340	.030	.605	-.121	-.025
PCTM	.087	.079	-.072	.739	-.033	.045
TEST1	-.852	-.098	.006	.030	.137	.055
TEST2	-.771	.146	.112	.020	-.126	-.008
TEST3	-.879	.012	-.117	-.090	.029	-.089
TEST4	.087	-.407	.160	-.215	.433	-.229
TEST5	.025	-.821	.022	-.051	.181	.116
TEST6	-.639	.119	.149	-.382	-.242	-.010
TEST7	-.007	-.894	.080	-.121	.069	.003
TEST8	-.069	-.840	.019	-.032	-.110	-.054
TEST9	-.858	-.203	-.024	.021	.109	.017
GRADE	.476	-.182	.158	-.613	-.161	.093
PCT STB[1]	-.199	-.147	-.203	.326	.614	.094
PCT TESL[2]	-.097	.119	-.001	-.077	-.058	-.803
CSOR1	.079	-.080	.825	-.119	-.013	-.087
CSOR2	-.260	-.066	.373	.291	-.449	.181
CSOR3	-.013	.082	.217	-.028	.551	.457
CSOR4	-.035	-.068	.318	-.010	.398	-.038
CSOR5	-.118	.234	.140	-.397	-.234	.487
CSOR6	.071	.022	-.949	.097	-.111	-.250

the factor analysis above the loadings tended to shift either to the test scores or the questionnaire, but did not indicate a strong relationship between them. This analysis confirmed a strong reading achievement factor, a generalized responsiveness to the questionnaire, a positive factor concerning appreciation for the CO-PLUS program, the gain in percent right of those attempted and a mathematics achievement factor. These data validated the general reading and mathematics achievement factors cited above.

The factor analysis for the Student Observational Instrument, the Student Questionnaire and the test score gains, indicated approximately the same factor structure as above.

Two additional interesting findings came from the above statistical analyses:

- grade was moderately but consistently negatively correlated with reading gain ($.2 < r < .4$), and
- the fifth factor score for the Student Questionnaire (the inverse of a general dislike of school) was consistently related to achievement in both reading and mathematics.

In summary, the above data suggest that, as has often been reported before, affective and observational information concerning students usually yields only low and moderate correlation with the actual achievement of those students, and often are not even correlated with each other. In this situation, it appears that there was a definite factor structure for the attitudinal

FIGURE 8

FACTOR ANALYSIS-CO-PLUS STUDENT QUESTIONNAIRE AND TEST SCORES

VARIMAX ROTATION

	1	2	3	4	5	6
	PERCENT OF VARIANCE					
	21.952	13.120	10.179	10.207	9.406	6.327
	ROTATED FACTOR LOADINGS					
PCTR	.503	.262	.190	-.578	.168	.070
PCTM	.318	.112	.012	-.761	.104	.136
TEST1	-.890	.045	-.108	.076	-.128	.138
TEST2	-.717	.235	.080	-.222	-.140	-.044
TEST3	-.889	-.135	-.158	-.004	-.141	.038
TEST4	.067	.007	-.140	.265	-.469	.095
TEST5	-.468	-.024	.079	-.013	-.640	.172
TEST6	-.727	.022	.116	.313	-.098	-.033
TEST7	-.419	-.201	-.054	.116	-.715	.129
TEST8	-.426	-.037	.096	-.111	-.676	-.161
TEST9	-.901	-.076	-.158	.065	-.188	.099
GRADE	.278	-.239	.029	.810	-.027	-.041
PCT STB[1]	-.245	-.155	-.051	-.087	.059	.786
PCT TESL[2]	-.088	-.152	-.247	.072	.303	-.683
CSQ1	-.078	.786	.062	.051	.217	.003
CSQ2	-.005	.705	-.515	-.202	-.111	.046
CSQ3	-.221	.533	-.472	.019	.161	-.284
CSQ4	-.024	.028	-.807	.196	.117	-.004
CSQ5	.164	.563	.280	-.348	-.017	-.102
CSQ6	.068	.120	.832	.097	.200	.101
CSQ7	-.075	-.849	-.057	.309	.043	-.052

scores, observation scores, and test score gains but these were only nominally correlated among themselves.

As shown in Figure 9, the factor analysis between the Teacher Questionnaire and the test scores yielded a definite factor structure for both sets of data, but again an independence between the sets of data. The first factor was a general response to the audio-visual and parent team projects, the second the reading achievement factor, the third a mathematics achievement factor, the fourth a response to the inservice project, the fifth an openess to differentiated staffing and the sixth a resistance to the changing authority patterns in the school. An intriguing sidelight to this analysis was the indication that the male pole of CTQ7 was related to lower gains in the percent of items correct of those attempted. This may be due in part to the relationship between the privileged role usually extended to male elementary school teachers, and the openess this transmits to students reducing their fear of failure.

Figure 10 indicates the means and standard deviations for the CO-PLUS Classroom Observational Record. These data indicate that the mean instructional group size was 12, that approximately 24% of all instruction was student self-directed, that approximately 64% of instruction involved the use of instructional materials beyond regular textbooks, that an average of approximately 40% of all instruction was directed toward groups of children while an average of approximately 36% of the instruction was directed toward the class as a whole,

FIGURE 9

FACTOR ANALYSIS OF THE CO-PLUS
TEACHER QUESTIONNAIRE AND TEST SCORES

VARIMAX ROTATION

	1	2	3	4	5	6	7	8
	PERCENT OF VARIANCE							
	13.866	12.094	9.796	7.897	8.943	6.203	4.992	4.830
	ROTATED FACTOR LOADINGS							
TQ1	-.719	.014	-.096	.430	-.070	-.092	-.248	-.028
TQ2	.461	.132	.031	-.714	.060	.013	-.100	-.035
TQ3	-.344	.031	-.007	.276	-.521	-.067	-.454	-.011
TQ4	-.191	.042	.010	-.855	.082	-.013	.012	.126
TQ5	.085	.116	.038	-.182	.283	.663	-.168	-.146
TQ6	-.177	-.054	.164	.095	-.157	-.175	.805	-.026
TQ7	-.181	.077	.162	.047	-.657	-.150	.106	.054
TQ8	-.787	-.043	-.109	-.042	-.063	-.255	.204	.012
TQ9	-.111	.020	-.011	-.132	.093	-.808	.097	.074
TQ10	-.395	.018	.003	.235	-.677	-.035	-.052	-.026
TQ11	.472	.063	-.087	-.632	-.180	-.081	.020	-.099
TQ12	-.873	-.040	-.029	.045	-.066	-.117	.061	.066
TQ13	.547	-.053	-.063	-.156	.259	-.383	-.045	-.109
TQ14	.199	.103	-.056	.010	-.513	.527	.344	.108
TQ15	-.838	.039	.058	-.066	-.199	-.015	.048	.007
PCT STB[1]	.249	-.207	.252	.251	-.037	.085	-.341	-.307
PCT TESL[2]	-.042	.084	-.109	-.182	-.605	.133	.038	.098
PCTR	-.034	.267	-.421	.037	.372	-.022	-.175	-.373
PCTM	.076	-.022	-.120	.016	.206	.139	.033	-.784
TEST1	.017	-.893	.117	.008	-.058	-.077	.044	-.167
TEST2	-.077	-.736	-.126	.160	.312	-.001	.044	.090
TEST3	-.008	-.800	-.107	.104	.053	-.012	-.188	.214
TEST4	.106	.048	.446	-.092	-.265	.078	-.208	.099
TEST5	.032	.032	.873	.093	.059	.007	.019	-.046
TEST6	-.010	-.638	-.087	-.045	.230	.034	.021	.527
TEST7	.079	.019	.879	.041	-.058	.033	.055	.063
TEST8	-.129	-.077	.749	-.058	.107	-.058	.112	-.009
TEST9	.032	-.899	.189	-.017	-.105	-.059	.050	-.180

FIGURE 10

DESCRIPTIVE STATISTICS FOR THE
CO-PLUS CLASSROOM OBSERVATIONAL RECORD
AND THE TEST SCORES

MEANS AND STANDARD DEVIATIONS

VARIABLE	MEAN	STD DEV
CCOR1	1 2709	9458
CCOR2	2 4066	3 0954
CCOR3	.7205	1 8690
CCOR4	2 1457	3 1911
CCOR5	6 4477	3 4904
CCOR6	1 1901	2 0070
CCOR7	1 0775	2 1613
CCOR8	3 9106	3 7936
CCOR9	2 4397	3 3073
CCOR10	.0212	1761
CCOR11	7166	1 9857
CCOR12	4 2934	4 2790
CCOR13	3 6113	4 3806
CCOR14	0338	3756
CCOR15	9 1642	1 3493
PCT STB[1]	70.2583	15.8528
PCT TESL[2]	2.8013	6.9513
PCTR	19.3245	24.5076
PCTM	14.9669	25.5300
TEST1	6.9824	4.1058
TEST2	6.9407	3.9889
TEST3	8.4315	4.4182
TEST4	5.8973	5.6693
TEST5	8.0181	4.2235
TEST6	10.9151	6.0235
TEST7	7.3865	4.3029
TEST8	6.3196	5.2047
TEST9	7.2966	3.6805

FIGURE 11

FACTOR ANALYSIS FOR THE
CO-PLUS CLASSROOM OBSERVATIONAL RECORD
WITH TEST SCORES

	VARIMAX ROTATION									
	1	2	3	4	5	6	7	8	9	10
	PERCENT OF VARIANCE									
	18.896	14.137	8.319	7.138	6.432	7.054	5.222	5.339	4.383	4.725
	ROTATED FACTOR LOADINGS									
CCOR1	.048	-.740	-.300	-.002	-.052	.027	-.003	-.107	-.009	.093
CCOR2	.042	.341	.445	-.020	-.093	-.072	.014	-.267	.180	.092
CCOR3	.138	-.032	-.024	-.027	-.044	.061	.920	.052	-.072	-.071
CCOR4	-.052	-.021	-.009	-.055	-.939	.001	-.165	.093	.017	.093
CCOR5	-.007	-.021	.008	-.053	.928	.039	-.206	.116	.082	-.011
CCOR6	-.034	-.228	-.129	-.047	-.011	.119	.061	-.682	.384	.126
CCOR7	-.022	.081	.938	.094	.033	.004	-.027	.140	.002	-.088
CCOR8	-.062	.864	-.261	-.019	-.039	-.081	-.205	.231	-.053	.097
CCOR9	-.016	-.876	-.207	-.056	.068	.028	-.145	.142	-.023	-.052
CCOR10	.019	.048	.035	.980	.006	.010	-.012	.022	-.022	.024
CCOR11	-.044	.041	.942	-.030	.022	.086	.009	.064	-.035	-.079
CCOR12	-.082	.897	-.217	-.011	.000	-.025	-.219	.158	.002	.097
CCOR13	.029	-.885	-.195	-.064	-.006	.018	-.173	-.015	.108	.027
CCOR14	-.005	.020	.013	.984	-.003	.028	-.003	.033	-.004	.023
CCOR15	.039	.071	.045	.026	.002	.090	.074	.836	.167	.051
PCT STB[1]	.121	.066	-.146	.033	-.117	-.015	-.078	-.018	-.131	.861
PCT TESL[2]	.103	-.049	.038	-.015	.056	.012	-.063	-.008	.877	-.107
PCTR	-.208	.076	-.015	-.074	.025	-.616	.231	.238	.301	-.003
PCTM	.055	.034	.003	.023	-.030	-.890	-.151	-.129	-.184	.138
TEST1	.931	-.007	-.040	.004	-.020	.033	.080	.006	.061	.059
TEST2	.852	.001	.039	.140	.028	-.039	.179	.001	.120	.077
TEST3	.866	-.020	-.002	-.053	.066	.007	-.020	.015	.044	.181
TEST4	.616	-.280	.126	.064	.052	.631	-.017	-.013	.059	.073
TEST5	.576	.074	.055	-.000	.030	.500	.113	.122	-.072	.191
TEST6	.734	-.063	-.027	-.036	-.006	.078	.078	-.034	-.014	-.314
TEST7	.612	.079	-.100	-.056	.007	.289	-.310	.063	-.200	-.364
TEST8	.541	-.099	-.020	-.058	-.099	.110	-.388	.069	-.109	-.381
TEST9	.957	-.069	-.037	-.001	-.010	.023	-.062	-.021	.003	.067

and, finally, approximately 90% of the students observed appeared to be attentive to the instruction they were receiving.

The factor analysis, summarized in Figure 11, indicated a pattern similar to those cited above. Factor 1 was a reading achievement factor, Factor 2 reflected the degree to which grouping was employed rather than instruction to the class as a whole, Factor 3 indicated the extent of individual instruction for student, Factor 4 assessed the emphasis on conference activities for students, Factor 5 indicated the use of instructional materials beyond textbooks, and Factor 6 reflected the gain in percent right of test items attempted.

Figure 12 documents the factor analysis of the two Observational Records. This procedure again yielded a similar factor structure to those indicated above when each was examined separately with the test scores. Similar results were found when the Teacher Questionnaire was added to the analysis.

In summary, there was a consistent pattern throughout the analyses reported here that:

- each of the instruments used in the evaluation had a fixed internal factor structure, and
- there was no overlap between factor structures, i.e. they were independent and uncorrelated.

FIGURE 12

FACTOR ANALYSIS - CO-PLUS CLASS OBSERVATIONAL RECORD
AND CO-PLUS STUDENT OBSERVATIONAL RECORD

VARIMAX ROTATION

1	2	3	4	5	6	7	8
PERCENT OF VARIANCE							
17.490	11.828	10.033	8.908	8.351	6.637	6.756	5.405

ROTATED FACTOR LOADINGS

CCOR1	-.684	-.361	-.109	-.005	.052	.026	.219	-.060
CCOR2	.332	.533	.144	.007	.051	-.064	.081	.199
CCOR3	-.021	.004	-.004	-.024	.090	.863	.059	.055
CCOR4	.018	-.028	.043	.047	.918	-.183	-.092	.046
CCOR5	-.024	.038	-.018	.064	-.898	-.352	-.114	.030
CCOR6	-.152	-.085	-.092	.015	-.011	.144	.753	.011
CCOR7	.039	.945	.040	-.081	-.046	-.023	-.140	-.075
CCOR8	.848	-.276	.018	.018	.031	-.238	-.253	.036
CCOR9	-.865	-.266	.063	.066	-.058	-.176	-.143	.016
CCOR10	.059	.017	.068	-.916	-.005	.075	-.038	-.005
CCOR11	.019	.934	.003	.026	-.044	.027	-.097	-.070
CCOR12	.892	-.196	-.003	.001	.023	-.266	-.149	-.006
CCOR13	-.873	-.258	.059	.075	-.018	-.194	-.017	.086
CCOR14	.006	.013	.046	-.943	-.001	-.041	-.045	-.007
CCOR15	.056	.078	-.107	-.049	-.016	.117	-.742	.073
CSOR1	-.094	.062	.726	-.012	-.076	.142	-.005	.111
CSOR2	-.005	-.051	.155	.046	-.002	.032	-.098	.895
CSOR3	.055	.077	.521	-.316	.087	-.175	.134	-.104
CSOR4	.147	.029	.440	.079	.217	-.209	.038	-.245
CSOR5	-.052	-.148	.302	.068	-.148	.419	-.226	-.367
CSOR6	.012	-.017	-.966	.040	-.011	-.096	.048	-.206

Conclusions

The results of this analysis, especially in view of the cost in both staff and computer time, were disappointing. Although each of these instruments was developed and administered independently of the others, it was hoped from a research point of view that significant relationships could be uncovered between them. On the basis of the statistical analyses reported above it appears that:

- the instruments are internally consistent, measuring definite attitudes and behaviors, and
- these attitudes and behaviors appear to be independent of achievement test scores and independent of each other.

From the point of view of the evaluation, however, this is not necessarily a bad situation, since the evaluation procedure is not made less efficient when there is no overlap between data sources. Thus, it appears that the data base used in this analysis was sufficient to fulfill the evaluation function, but insufficient to fulfill the desired research function

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